

Notice of Allowability

Application No.

10/614,527

Applicant(s)

VAN OPDORP, DAMON GERARD

Examiner

Michael D. Pham

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2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/13/07.
2. ☒ The allowed claim(s) is/are 1, 6-8, 10-16, 19-24, 28-30, 32-38, 40-46, 49-51.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>10/24/07</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. Claims 1, 6-8, 10-16, 19-24, 28-30, 32-38, 40-46, and 49-51 are pending in this office action.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Richard J. Gregson (reg. 41,804) on October 24, 2007.

In the claims:

Claims 1, 6-8, 10-16, 19-24, 28-30, 32-38, 40-46, and 49-51 have been amended. Please replace all prior claims with the following:

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Claim 1 (amended):

A computer implemented method for a primary application to provide an indication of [[the]] integrity of a database including the steps of:

i. obtaining a first reference reduced representation by:

a. applying a process to obtain first schema metadata

[representative] of a database structure of a database [[from the secondary application]], where the first schema metadata is selected from a set of tables, columns in tables, data types of columns, lengths of columns, custom database data types foreign keys, constraints, stored procedures, views, triggers, indices, and scheduled jobs;

b. creating a first reference reduced representation of the first obtained schema metadata using an algorithm, where the algorithm is a hash function selected from a set of MD5 (Message-Digest algorithm 5) and CRC32 (Cyclic redundancy check 32); and

c. storing the first reference reduced representation by embedding the first reference reduced representation within configuration files for the primary application;

ii. during execution of [[a]] the primary application, applying [[the]] a process to obtain second schema metadata [representative] of the database structure of a same database[[from the secondary application]], where the second schema metadata is selected from the set of tables, columns in tables, data types of columns, lengths of columns, custom database data types foreign

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keys, constraints, stored procedures, views, triggers, indices, and scheduled jobs;

iii. creating a second reduced representation of the second obtained schema metadata using the algorithm;

iv. comparing the stored first reference reduced representation with the created second reduced representation so as to provide an indication of the integrity of the database by determining whether the database structure changed during a time when the first reference reduced representation and second reduced representation were obtained; [[and]]

v. controlling execution of the primary application dependent on the indication, where the execution of the primary application is controlled by the primary application sending an error message to one selected from a set of a user of the primary application, a manager of the primary application, a manager of the database and the database; and

vi. requesting a schema stability lock to guarantee that the schema of the database does not change between subsequent database integrity verifications.

Claims 2-5 (cancelled)

Claim 6 (amended):

The method as claimed in claim [[2]] 1, wherein the algorithm is a lossless compression algorithm.

Claim 7(amended):

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The method as claimed in claim 6, wherein the lossless compression algorithm is one selected from the set of zip, gzip, and bzip2.

Claim 8 (amended):

The method as claimed in claim [[2]] 1, wherein the first reference reduced representation is stored by embedding [the] representation within the primary application.

Claim 9 (cancelled):

Claim 10 (amended):

The method as claimed in claim [[2]] 1, wherein step (i) is repeated before (ii) to (v) at least one time when an expected change occurs to the schema metadata in the database.

Claim 11 (amended):

The method as claimed in claim [[2]] 1, wherein the process includes organizing [[the]] extracted schema metadata using a nested and determinable method.

Claim 12 (amended):

The method as claimed in method 11, wherein the nested and determinable method is by alphabetical listing of [[the]] schema metadata elements.

Claim 13 (amended):

The method as claimed in claim 11, wherein the nested and determinable method is by default database order of [[the]] schema metadata elements.

Claim 14 (amended):

The method as claimed in claim 11, wherein the nested and determinable method is by creation date order of [[the]] schema metadata elements.

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Claim 15 (amended):

The method as claimed in claim 11, wherein the nested and determinable method is by table owner of [[the]] schema metadata elements.

Claim 16 (amended):

The method as claimed in claim [[2]] 1, wherein the execution of the primary application is controlled by halting execution of the primary application.

Claim 17-18 (cancelled)

Claim 19 (amended):

The method as claimed in claim [[2]] 1, wherein the process obtains all available schema metadata.

Claim 20 (amended):

The method as claimed in claim [[2]] 1, wherein the process only obtains the schema metadata which would affect the primary application if that schema metadata were to change.

Claim 21 (amended):

The method as claimed in claim [[2]] 1, wherein the process utilizes [[SQL]] Structured Query Language 92 standard to obtain [the] schema metadata from the database.

Claim 22 (amended):

The method as claimed in claim [[2]] 1, wherein the process utilizes the database's Application Programming Interface (API) to obtain [the] schema metadata from the database.

Claim 23 (amended):

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The method as claimed in claim 22, wherein the database's API is a [[j]]Java database API.

Claim 24 (amended):

A computer system for providing an indication of [[the]] integrity of one or more databases for a plurality of applications including:

[[i]] a plurality of applications [[adapted to carry out the method of claim 1]]

stored in memory and executed by a processor to execute the steps of:

i. obtaining a first reference reduced representation by:

a. applying a process to obtain first schema metadata of a

database structure of a database, where the first schema metadata is schema metadata that is selected from a set of tables, columns in the tables, data types of columns, lengths of columns, custom database data types foreign keys,

constraints, stored procedures, views, triggers, indices, and scheduled jobs;

b. creating a first reference reduced representation of the first

obtained schema metadata using an algorithm, where the algorithm is a hash function selected from a set of MD5 (Message-Digest algorithm 5) and CRC32 (Cyclic redundancy check 32); and

c. storing the first reference reduced representation by

embedding the first reference reduced representation within configuration files for a primary application;

ii. during execution of the primary application, applying a process to

obtain second schema metadata of the database structure of a same database,

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where the second schema metadata is selected from a set of tables, columns in the tables, data types of columns, lengths of columns, custom database data types foreign keys, constraints, stored procedures, views, triggers, indices, and scheduled jobs;

iii. creating a second reduced representation of the second obtained schema metadata using the algorithm;

iv. comparing the stored first reference reduced representation with the created second reduced representation so as to provide an indication of the integrity of the database by determining whether the database structure changed during a time when the first reference reduced representation and second reduced representation were obtained;

v. controlling execution of the primary application dependent on the indication, where the execution of the primary application is controlled by the primary application sending an error message to one selected from a set of a user of the primary application, a manager of the primary application, a manager of the database and the database; and

vi. requesting a schema stability lock to guarantee that a schema of the database does not change between subsequent database integrity verifications;

[[iii]] II. a database [[adapted to]] configured to receive requests for schema metadata from the plurality of applications and to transmit schema metadata to the plurality of applications dependent on said indication.

Claims 25-27 (cancelled)

Claim 28 (amended):

The system as claimed in claim 24, wherein reduced representations are calculated using a lossless compression algorithm.

Claim 29 (amended):

The system as claimed in claim 28, wherein the lossless compression algorithm is one selected from a [the] set of zip, gzip, and bzip2.

Claim 30 (amended):

The system as claimed in claim 24, wherein each previously calculated reduced representation is stored by embedding a [the] representation within its associated application.

Claim 31 (cancelled):

Claim 32 (amended):

The system as claimed in claim 24, wherein each schema metadata is organized using a nested and determinable method before its reduced representation is calculated.

Claim 33 (amended):

The system as claimed in claim 32, wherein the nested and determinable method is by alphabetical listing of [[the]] schema metadata elements.

Claim 34 (amended):

The system as claimed in claim 32, wherein the nested and determinable method is by default database order of [[the]] schema metadata elements.

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Claim 35 (amended):

The system as claimed in claim 32₁ wherein the nested and determinable method is by creation date order of [[the]] schema metadata elements.

Claim 36 (amended):

The system as claimed in claim 32₁ wherein the nested and determinable method is by table owner of [[the]] schema metadata elements.

Claim 37 (amended):

The system as claimed in claim 24₁ wherein a [the] result of each comparison controls execution of its associated application.

Claim 38 (amended):

The system as claimed in claim 37₁ wherein the execution of the application is controlled by halting execution of the application.

Claim 39 (cancelled):

Claim 40 (amended):

The system as claimed in claim 24₁ wherein the plurality of applications are [[are further adapted to]] request a schema stability lock of the one or more databases.

Claim 41 (amended):

The system as claimed in claim 24₁ wherein each application [[is adapted to]] extracts all available schema metadata from each database.

Claim 42 (amended):

The system as claimed in claim 24₁ wherein each application [[is adapted to]] extracts the schema metadata which would affect the application if the schema metadata were to change.

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Claim 43 (amended):

The system as claimed in claim 24, wherein each application [[is adapted to]] utilizes [[SQL]]Structured Query Language 92 standard to extract the schema metadata from each database.

Claim 44 (amended):

The system as claimed in claim 24, wherein each application [[is adapted to]] utilizes the database's Application Programming Interface (API) to extract the schema metadata from each database.

Claim 45 (amended):

The system as claimed in claim 44, wherein the database's API is a Java database API.

Claim 46 (amended):

A system comprising a processor, a memory, and verification engine for providing an indication of [the] integrity of a database [[an application wherein]] comprising:

[[i]] I. an application;

[[ii]] II. a stored reduced representation of schema metadata [representative] of the structure of a database; and

[[iii]] III. a verification engine which upon connection to a database executes the [[method of claim 1]] steps of:

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i. obtaining a first reference reduced representation by:

a. applying a process to obtain first schema metadata of a database structure of a database, where the first schema metadata is schema metadata that is selected from a set of tables, columns in the tables, data types of columns, lengths of columns, custom database data types foreign keys, constraints, stored procedures, views, triggers, indices, and scheduled jobs;

b. creating a first reference reduced representation of the first obtained schema metadata using an algorithm, where the algorithm is a hash function selected from a set of MD5 (Message-Digest algorithm 5) and CRC32 (Cyclic redundancy check 32); and

c. storing the first reference reduced representation by embedding the first reference reduced representation within configuration files for a primary application;

ii. during execution of the primary application, applying a process to obtain second schema metadata of the database structure of a same database, where the second schema metadata is selected from a set of tables, columns in the tables, data types of columns, lengths of columns, custom database data types foreign keys, constraints, stored procedures, views, triggers, indices, and scheduled jobs;

iii. creating a second reduced representation of the second obtained schema metadata using the algorithm;

iv. comparing the stored first reference reduced representation with the created second reduced representation so as to provide an indication of the

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integrity of the database by determining whether the database structure changed during a time when the first reference reduced representation and second reduced representation were obtained; and

v. controlling execution of the primary application dependent on the indication, where the execution of the primary application is controlled by the primary application sending an error message to one selected from a set of a user of the primary application, a manager of the primary application, a manager of the database and the database; and

vi. requesting a schema stability lock to guarantee that the schema of the database does not change between subsequent database integrity verifications.

Claim 47-48 (cancelled)

Claim 49 (amended):

The system as claimed in claim 46, wherein the stored reduced representation is stored by embedding the representation within the application.

Claim 50 (amended):

The system as claimed in claim 48, wherein each schema metadata is organized using a nested and determinable method before its reduced representation is calculated.

Claim 51 (amended):

The system as claimed in claim 46, wherein the application is controlled by halting execution of the application.

Claim 52-55 (cancelled)

Allowable Subject Matter

3. Claims 1, 6-8, 10-16, 19-24, 28-30, 32-38, 40-46, and 49-51 are allowed.

4. The following is a statement of reasons for the indication of allowable subject matter:

The claimed invention of claims 1, 24, and 46 are directed to a first and second reduced representations compared so as to provide an indication of the integrity of the database by determining whether the database structure changed during a time between the first reference reduced representation and second reduced representation.

With respect to independent claims 1, 24, and 46, the prior art of record, single or in combination, does not teach or fairly suggest the step of:

"creating a first reference reduced representation of the first obtained schema metadata using an algorithm, where the algorithm is a hash function selected from a set of MD5 (Message-Digest algorithm 5) and CRC32 (Cyclic redundancy check 32); creating a second reduced representation of the second obtained schema metadata using the algorithm; comparing the stored first reference reduced representation with the created second reduced representation so as to provide an indication of the integrity of the database by determining whether the database structure changed during a time when the first

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reference reduced representation and second reduced representation were obtained requesting a schema stability lock to guarantee that the schema of the database does not change between subsequent database integrity verifications" in combination with all the other claimed elements.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael D. Pham whose telephone number is (571)272-3924. The examiner can normally be reached on Monday - Friday 9am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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